

# IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES ▼

## HUMAN RESOURCES ENTERPRISE

### MATERIALS TECHNICIAN 4

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#### DEFINITION

Serves as a lead worker and performs highly technical work in materials inspection and plant calibration activities relating to materials used in highway construction and maintenance projects; performs related work as required.

***The Work Examples and Competencies listed are for illustrative purposes only and not intended to be the primary basis for position classification decisions.***

#### WORK EXAMPLES

Assists the supervisor by instructing employees, answering questions and, distributing, balancing and checking work; may make suggestions on appointments, promotions, performance and reassignments.

Inspects the manufacture of asphalt concrete and Portland cement concrete at contractor plants by sampling, grading, and analyzing raw materials used in the materials manufacturing process for highway construction and maintenance projects within a Highway Division field district.

Plans and performs materials sampling, inspection, and testing activities in the central laboratory or assigned field area in order to assure compliance with all requirements for sampling and testing through the use of complex plans and specifications.

Performs mathematical calculations necessary to detect errors in computation made by lower level technicians and to establish standard deviations or other data required to assure the precision of test data.

Recommends revisions to established sampling or testing procedures in order to obtain special information concerning material characteristics.

Interprets and resolves technical problems encountered by lower level technicians relating to specifications, sampling, or testing procedures and techniques.

Evaluates new equipment, procedures, products, and/or techniques used in the analysis and sampling of materials to evaluate the effectiveness of such methods as compared to present methods.

Compiles, prepares, and presents periodic and special reports for materials administrative staff relating to materials testing, inspection, and/or sampling activities performed for specific projects or programs.

Assures accurate and complete performance of complex testing, inspection, and/or research by coordinating operations within a major laboratory section or field unit; disseminates information to assure each member of the work team is informed of expectations; handles complaints and refers matters beyond delegated authority to proper supervisors.

Designated positions perform duties related to snow and ice removal, which include: accessing the Roadway Weather Information System (RWIS), weather reports, and other related computer software applications to record and receive data and make decisions regarding times, temperatures, weather conditions, and material usage to operate snow and ice removal equipment such as, but not limited to single or tandem axle dump trucks that may be equipped with tailgate or hopper spreader, straight blades or V-plows, wing plows, and underside ice blades; includes preparing and spreading abrasives and de-icing chemicals on the roadway by using a loader for mixing abrasives and chemicals; may perform other maintenance duties as assigned.

**COMPETENCIES REQUIRED**

Knowledge of the requirements and intent of applicable codes, standards, and specifications for materials used in the construction and maintenance of highways.

Knowledge of the contemporary principles and practices relating to the training and direction of subordinate employees.

Knowledge of the occupational hazards and safety precautions applicable to the work.

Knowledge of the basic principles of physical science as required by specific work assignments.

Knowledge of the standard principles, methods, procedures, and policies related to the sampling, inspection, and/or testing of materials used in the construction and maintenance of highways.

Knowledge of the equipment and procedures used by materials producers.

Knowledge of basic engineering principles and practices as applied to the use and production of materials used in the construction and maintenance of highways.

Ability to occasionally (1-33% of the time) lift/lower, carry and push/pull various amounts of force within the "heavy work" as defined by the US Department of Labor; team lift or mechanical assist recommended for weights over 75 pounds. Related work examples: 70 pound bag of aggregate, 60 pound asphalt hot box, 118 pound beam breaker, and 80 pound concrete beam in mold, etc.

Ability to work outdoors in all types of weather conditions, day or night, in normal and emergency situations.

Ability to climb, kneel, crouch, crawl, stoop and twist and perform duties using appropriate tools and equipment within safety standards.

Ability to walk over uneven ground.

Ability to drive vehicles in a safe and conscientious manner.

Ability to read and write English.

Ability to understand and follow verbal and written directions/instructions given in English.

Ability to operate computers and/or other electronic devices and use programs/applications to conduct Department of Transportation business.

Ability to read, understand, and apply complex design plans, shop drawings, codes, standards, specifications, and guidelines in order to plan, direct, and enforce testing and inspection procedures.

Ability to receive, record, and communicate data or observations accurately and legibly.

Ability to operate, maintain, and calibrate equipment used in the materials sampling and analysis process.

Ability to understand oral and written instructions and apply them to practical work situations.

Ability to accurately perform mathematic calculations.

Ability to relate abstract ideas to actual needs and adopt an effective course of action in resolving technical problems relating to the adaptation of policies and/or procedures to new equipment or methods.

Ability to perform basic scientific tests to determine the physical properties of materials used in highway construction and maintenance projects.

Designated positions will also require the:

Knowledge of effects of weather on road surfaces.

Knowledge of winter maintenance operations, such as anti-icing and de-icing principles.

Ability to drive equipment with a manual transmission and clutch.

Ability to appropriately use anti-icing or de-icing materials.

Skill in use of Roadway Weather Information System (RWIS), weather reports and other related computer software applications.

Displays high standards of ethical conduct. Refrains from dishonest behavior.

Works and communicates with all clients and customers providing polite, quality professional service.

Displays a high level of initiative, effort, attention to detail and commitment by completing assignments efficiently with minimal supervision.

Follows policy, cooperates with supervisors and aligns behavior with the goals of the organization.

Fosters and facilitates cooperation, pride, trust, group identity and team spirit throughout the organization.

Exchanges information with individuals or groups effectively by listening and responding appropriately.

#### **EDUCATION, EXPERIENCE, AND SPECIAL REQUIREMENTS**

Experience equal to five years of full-time work in the sampling, testing, and/or inspection of materials used in highway construction and maintenance projects;

OR

an equivalent combination of education and experience substituting 30 semester hours of accredited post high school education in engineering, metallurgy, geology, or chemistry for each year of the required experience to a maximum substitution of two years;

OR

employees with current continuous experience in the state executive branch that includes one year of full time work as a Materials Technician 3.

#### **NECESSARY SPECIAL REQUIREMENTS**

Designated positions must possess a valid Commercial Driver's License (CDL) Instruction Permit upon hire. Within 14 calendar days following appointment, a valid Class A Commercial Driver's License must be obtained and maintained with air brake and tanker endorsements in order to continue employment. Other endorsements may also be required.

If a CDL is not required, designated positions are required to have and maintain a minimum of a valid Class C Non-Commercial Operator's License.

In conjunction with Title 49 of the Code of Federal Regulations (parts 40 and 382), designated positions in this job class require a pre-employment drug screen and will require ongoing participation in the employer's random drug and alcohol testing program and will be subject to the regulations regarding the Federal drug and alcohol program.

Prior to starting employment, all persons are required to have a post offer pre-employment physical verifying the physical ability to perform the duties described.

Positions require certification for testing materials and operating specialized equipment as required by the Iowa Department of Transportation's Technical Training and Certification Program for Highway Materials and Construction; and/or other certifications as required.

#### **NOTES**

Employees must be able to travel and may be required to stay away from home overnight during assignments.

Employees in designated positions must be able to work up to 16 consecutive hours.

Effective Date: 10/13 BR